Claims

What is claimed is:

1. A method ~~and process~~ for array shape inferencing for an array-based language ~~such as MATLAB.~~

2. The method enables a compact representation of shape at compile time.

3. The highlights of the method are its generality and uniformity.

4. The representation facilitates program-wide shape inferencing by forward composing the individual shape-tuples.

5. The representation does not depend upon any compile-time overestimate of shape.

6. The representation exactly captures the shape that the MATLAB expression assumes at run time, even when program variables may be unknown at compile time.

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7. Unlike the current state-of-the-art (i.e., the shadow variable scheme) the representation does not obscure important shape information even when the array extents are not known at compile time.

5 8. The framework exposes useful algebraic properties that underlie MATLAB's shape semantics.

9. The methodology of claim 8, wherein the algebraic properties can be used for various compile-time optimizations such as reducing array

10 conformability checking and allocating memory in advance.

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